INSTRUCTIONS FOR
USE AND OPERATION OF THE

Meissner

RADIO PHONO RECORDER

MODEL 9-1065

OPERATION

The following chart is designed to give the user of the Meissner Radio-Recorder a quick insight of the functions of the various controls. For best results the notes and instructions following the chart should be read and followed, since the chart alone cannot contain all the information essential to the proper use of the equipment.

In the top row of the chart are listed the five functions of the unit, corresponding to the five positions of the selector switch in the center of the control panel. In the left hand column are listed the different controls and other devices on the control panel. By glancing down any vertical column it can be immediately determined what controls and indicators are in use for that position of the selector switch.

In operating the Meissner Radio-Recorder as a radio receiver, a record player, a recorder, or a public address system, there are certain precautions that must be observed and also several special hook-ups that may be used to get the best results and to take advantage of the full flexibility of which the unit is capable. These are listed under sub-headings following, and should be studied carefully before attempting to operate the equipment, and should also be referred to often until the user is fully acquainted with his equipment and all functions it will perform.

Position of Selector Switch	Radio Only	Phono Playback	Record Mike	Record Radio	Public Address
Tuning	Radio Tuning	———	———	Radio Tuning	———
Tone	——— Tone Control & Line Switch ———				
Normal and Overload	———	———	Volume Level Indicators	Volume Level Indicators	———
Volume (Left Hand)	——— Volume Control for Left Hand Mike ———				
Volume (Right Hand)	Radio Volume Contol	Phono Volume Control	Volume Control for Right Hand Mike	Radio Volume Control	Volume Control for Right Hand Mike
Mike (Left Hand)	Input for Mike, External Radio, or External Phono ———				
Mike (Right Hand)	———	———	Input for Mike Ext. Phono Ext. Radio	———	Input for Mike Ext. Phono Ext. Radio
Gain	—Gain Control for using different types of Microphones ———				

POWER SUPPLY

This Radio-Recorder is designed to operate from a 110-125 volt 50-60 cycle alternating current supply. Never attempt to operate it from other source of supply—serious damage to the equipment is almost sure to occur.

LINE SWITCH

The line switch for the unit is located on the tone control. The switch for the turntable is located in the front, right hand corner of the turnable base. The turntable will not operate unless both the master switch on the tone control and the motor switch are turned on.

ADJUSTMENT

CUTTER ARM HEIGHT

The cutter arm height is adjusted at the factory for a standard 5/8" stylus. If recoring blanks of the usual home recording type are used, the cutter arm height should not have to be changed. If recording blanks of unusual thickness are used, it will be necessary to re-adjust the cutter arm height. For instructions for performing this adjustment, refer to the section of this instruction sheet entitled SERVICE NOTES.

CUTTER ARM PRESSURE

Variation in the hardness of different record coatings may require different cutting pressures for different makes of records.

The normal depth of cut produces a width of groove approximately equal to the width of the uncut portion left between grooves. When changing kinds or make of records examine a portion of the new record after having made a trial cutting to see if it approaches this condition. If not, refer to the SERVICE NOTES of this sheet and make the proper adjustment according to the instructions given there.

REPRODUCING NEEDLES

In choosing the correct reproducing needles to use, it should be kept in mind that while most any good make of reproducing needle is satisfactory for reproducing commercial records, the same is not true with home recordings. The material used to make instantaneous recording blanks is necessarily softer than the material used in commercial records and is more easily damaged by a reproducing needle which is not properly made to fit the groove in the record. There are a number of good needles on the market made especially for reproducing instantaneous recordings and one of these should be chosen.

RECORDING STYLI

Recording styli are made of three general types of material, ordinary hard steel, special tool steel and alloy such

as Stellite or equivalent, or they may be made of the still harder material, sapphire. When samples of all three types of styli are in good condition, it can usually be demonstrated that the steel styli, either regular steel or tool steel, produce about equal surface noise, while the sapphire stylus will usually produce less.

The advantage of the special alloy steel stylus over the regular steel stylus is longer playing life, but this is accomplished at a sacrifice in ability to withstand abuse. The same thing applies to sapphire styli only to a much greater extent because the sapphire is quite brittle and can easily be chipped.

The two accidents most likely to damage a stylus are:

(1) Dropping the cutting arm so that the stylus strikes some surface thereby chipping or breaking the stylus.

(2) Cutting through the record coating into the base material.

The latter may be caused by poor quality or damaged records, either by cutting through thin spots that may exist, or by digging in after the stylus has been thrown off of the record surface by bumps or hard spots.

From the foregoing, it seems that in general home recording service, especially if the equipment may be handled by many people, as at parties, amateur dramatics, amateur concerts etc., it is more economical to use good quality regular steel styli that can be discarded without regret if accidentally damaged, rather than to invest in a supposedly long-lived high priced stylus, whose life may be greatly shortened by the careless act of some well meaning but uninformed person.

RECORD BLANKS

The Meissner Radio-Recorder is designed to cut records up to 10 inches in diameter and to play records up to 12 inches in diameter.

"Instantaneous Recording" phonograph discs are comparatively new and consequently their manufacturer is far from being standardized. The only rule for selection is that of experience, either personal or that of your dealer. The record that performs best for you on your recorder is the best for you to use. Concentrate on that particular brand if you wish to produce consistently good recordings.

The most important characteristics of a record are listed below to be used as a guide in comparing and selecting records:

1. The blank should cut a clean shiny groove and produce a continuous thread. Records which produce a rough and dull looking groove, or which powder the material cut out of the groove, or which break the thread up into many pieces, or that produce a "sticky" thread, are not good records.

2. The "needle scratch" should be low. Generally the record producing the smoothest looking grooves will give the lowest needle scratch, but a more reliable method of testing is to cut a few blank grooves at the same radius with the same stylus on each of the records to be compared, and then to play them successively with the same setting of the volume control for all records, selecting the one producing the least volume of scratch, provided that its other characteristics are acceptable.

3. "Rumbel" is produced on some records having very flexible base materials. This is especially true of paper records. It is almost axiomatic that if a high quality recording is desired a paper (or other very flexible) base record should not be used, however, because of the economy that such discs offer they probably will enjoy the maximum volume of sale.

4. The "ageing" characteristics of records is a factor influencing the production of consistently good recordings but is somewhat difficult for the home recordist to check unless he is on the lookout for such differences and is a keen observer. Some records cut beautifully at a certain age and less well both before and after that time. Others cut well only when relatively fresh, while still others will not cut well until they have aged some time. This ageing characteristic may explain why a certain make of record may give excellent results at one time and not at another.

5. High Frequency Response is a characteristic in which wide variation can be expected. The variation between some makes of records is so great that only the most casual listening test is required to distinguish the record with good high-frequency response from that with poor high-frequency response. Such a test should, of course, be made with the same stylus, the same type of program, and the same type of play-back needle. Preferably the test should be made with live program material having a reasonable percentage of high-frequency notes. If the program is obtained from the radio, the tuning should be adjusted to produce a reasonable percentage of high notes and should not be changed between the several test runs because the tuning of most sets has a considerable influence on the high-frequency response.

6. Groove depth should be uniform. If there is any great difference in cutting depth a definite "pattern" will be evident on the record and the variable load on the motor will tend to produce a "wow" or unsteadiness in tone.

RECORDING SPEED

Two recording speeds are provided on the Meissner Radio-Recorder, 78 RPM and 33⅓ RPM. In general it may be said that the 78 RPM speed is for quality, the 33⅓ RPM speed for economy.

The 33⅓ RPM speed is not recommended where the best fidelity is desired. It will be found that at the center of the record, made at this speed, music loses its brilliance and does not have the high frequency notes recorded faithfully. The same is true of speech recordings but to a much lesser degree, since the high frequencies contained in voice are negligible. Thus when recording long speeches the 33⅓ RPM speed offers the advantage of being able to record for longer time intervals without interruptions to change records, as well as the advantage of record economy. For instance, a 10 inch record when operated at 78 RPM will record 4½ minutes of program material, while at 33⅓ RPM it will record 10 minutes of program material.

In other cases where the best fidelity is not essential, it may be found that the economy of the lower recording speed is more desirable than the better quality of the higher speed.

The switch that controls the turntable speed is located on the front left-hand corner of the turntable base.

VOLUME INDICATORS

ONE OF THE MOST IMPORTANT PHASES OF RECORDING IS CLOSE ATTENTION TO THE PROPER RECORDING VOLUME. THE BEST OPERATION IS OBTAINED WHEN THE "NORMAL" NEON INDICATOR IS LIT AS MUCH OF THE TIME AS POSSIBLE WHILE THE "OVERLOAD" NEON INDICATOR FLASHES ONLY AT RARE INTERVALS. A close control of program level is required to achieve such results but every bit of effort expended in the attempt will be well worth while.

If the volume is too high, it will cause distortion to be recorded on the disc. Once this distortion is recorded, no playback amplifier, however perfect it may be, can reproduce the program without distortion. Too much volume while recording will also cause overcutting, that is cutting into an adjoining groove, and may damage the cutting stylus itself.

If the recording level is too low, the surface noise is exaggerated and the playback has to be made with a high setting of the volume control. In the extreme case of very low recording volume, the volume control on playback may have to be set so high that a low frequency "microphonic howl" may be set up that can be eliminated only by turning down the volume control or by playing the record on an electric phonograph that has the speaker well isolated from the turntable and pickup.

When a musical program of a limited range of volume levels is being recorded, the volume control should be set so that the maximum volume operates the "overload" indicator only at very rare intervals. If the program has a very wide range of level, the volume will have to be turned up somewhat in the softest passages and reduced in the loudest passages. Such a practice is standard in professional recording and is the only way in which, for example, the tremendous volume range of a symphony orchestra from a single instrumental solo to full orchestra can be recorded without having the loud passages "cut over" into adjacent grooves, or having the softest passages covered up by needle scratch.

It will be helpful when recording to keep in mind that the volume indicators are giving a direct indication of the volume level being applied to the cutting head.

TONE CONTROL WHEN RECORDING

The setting of the tone control when recording is partly a matter of choice and preference of the operator but it might well be pointed out here that usually the most satisfactory recordings are made with the tone control turned to the counter-clockwise position. There are exceptions to this and the operator, after a little experience in handling the equipment will learn what setting of the tone control is required for any particular set of conditions.

MAKING A RECORD

The first attempt at cutting a record may best be done by recording from the microphone. After having plugged the microphone into the left-hand mike jack, turn on the line switch and set the selector switch to "Record Mike", speak into the microphone in a normal tone of voice about four to six inches away from it and adjust the left hand volume control until the "normal" neon indicator is flashing most of the time but the "overload" neon indicator flashes only occasionally. Touch a finger lightly to the needle in the cutting head and you will feel the needle vibrate in accordance with the sound impressed on the microphone.

In placing the recording disc on the turntable make certain that the drive pin enters the hole provided for it in all recording discs. NEVER PUT ON OR REMOVE A DISC WHILE TURNTABLE IS ROTATING. To do otherwise will injure the drive mechanism. ALWAYS HAVE TURNTABLE IN MOTION BEFORE LOWERING CUTTING STYLUS DOWN ON DISC as the stylus may easily be damaged if this care is not taken.

Pick up the cutting head, swing it over the record and lower it gently onto the record at the desired starting point. Permit two or three grooves to be cut before beginning the recording so that when the record is played back it will not be essential that the pickup start at the beginning of the first groove in order to reproduce the beginning of the recording. During the entire recording very careful attention should be paid to the volume indicators as explained in the section "Volume Indicators." Note: The mechanism which traverses the cutting head is engaged when the cutting head is lowered onto the record. Never attempt to force the cutting head sideways. Lift it first, which will disengage the cross-feed mechanism and allow the arm to be swung freely into any desired position. Lowering the arm onto its rest does not engage the cross-feed because the mechanism does not operate at such a great radius. For the same reason, the recorder will not cut 12 inch discs.

When the recording is finished, the "thread" that the stylus has cut out of the disc must be removed before the record is played. The best device for this purpose is a camels hair brush with which the thread is "picked up" rather than merely brushed to the center for manual removal, but if no brush is available, a wad of cotton, a piece of soft cloth or even a finger drawn lightly over the disc may be used to gather the thread around the spindle where it can be easily removed. The "thread" should be deposited in some fireproof container since many of the "Instantaneous Recording" discs are coated with highly inflamable cellulose nitrate (celluloid) although there are others coated with cellulose acetate (safety film) which do not require such precautions. It is very wise operating procedure to assume that all "threads" are inflammable and to dispose of them accordingly.

EXTERNAL ANTENNA

A built in loop antenna is supplied with the unit. This antenna should give excellent results in localities reasonably near the stations to be received. However, in some localities the performance of loop antennas is not entirely satsifactory and for this reason provision has been made for connecting an external antenna.

A lead will be found in the microphone compartment to which an external antenna may be connected. No ground connection is ecessary.

PUBLIC ADDRESS SYSTEM

The amplifier in the unit has ample power for many applications as a public address amplifier. When coverage of an area greater than that of a medium sized room in a home is desired, it is best to use an external speaker connected as explained under EXTERNAL SPEAKERS. Such a speaker should be mounted in a baffle or carrying case and a little experiment in its placement will soon show how best results may be obtained.

When using the unit as a public address system, it will be found that if the speaker is operated near the microphone the sound from the speaker will feed back into the microphone causing a "howl". This is true in any PA system and may be remedied by (a) removing the loud speaker farther from the microphone (b) reducing the volume (c) using a directional microphone turned so that its direction of greatest pickup is away from the loud speaker.

EXTERNAL SPEAKER

If it is desired to use an external speaker instead of the one in the unit, provision is made for doing so. The voice coil of an external speaker may be plugged into the phone plug jack located on the back side of the turntable base. The voice coil impedence of the external speaker should be 6 to 8 ohms. This cuts out the internal speaker voice coil and substitutes the voice coil of the external speaker. An external speaker so used must either be of the permanent magnet type or of the electrodynamic type with self-contained field supply.

The advantages of such an arrangement are that for use as a public address system, the speaker may be placed in a remote position away from the amplifier to get better sound coverage in a room or building, at the same time, reducing the tendency for microphonic feed back from the speaker to the microphone when high output is desired.

MIXING

The input from the left hand mike jack may be superimposd on any other input to the system at any time by merely turning up the left hand volume control. The input from this jack may be fed in any time regardless of the setting of the selector switch. Before attempting to make a recording by mixing in the input from this channel, it will be well to do a little experimenting with the setting of the two volume controls to assure that the signals from the two input channels have the correct relative levels when they reach the cutting head. This may be done by adjusting each volume control while the other is turned to zero, adjusting to the correct level by observing the neon indicators and noting the setting of the volume control knob. After the correct setting for each has been determined in this way, set each volume control knob to its correct position and make the recording.

MONITORING

There are several conditions under which it is desirable to be able to listen to the output of the amplifier when the speaker must of necessity be in-operative. The one such condition most commonly encountered is when recording from the self contained radio receiver, and is automatically taken care of in the switching. When the selector switch is turned to the "Record Radio" position, the speaker is put into the circuit but is operated at reduced volume. Thus the operator may hear the program material at the same time it is being recorded and can determine when the recordings should be stopped etc.

Other conditions under which it may be desirable to monitor the amplifier output are:

1. When recording from an external radio.
2. When recording from two mikes. The operator may desire to listen to the actual signal that is being applied to the cutting head to keep the levels from the two mikes equal.
3. When operating as a PA system using a remote speaker. If the remote speaker is located some distance away or in another room, the operator can use monitoring phones to adjust volume level etc.

Provision is made for plugging in high-impedence headphones for monitoring. They should plug into the Phone tip jacks located on the left hand rear side of the turntable base. Only high impedence phones should be used.

MICROPHONES

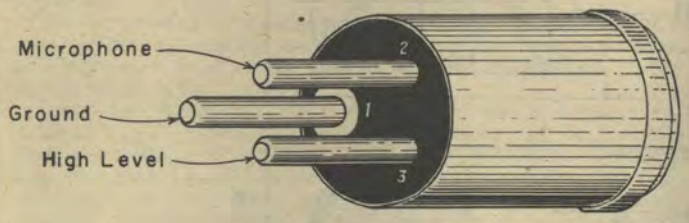
Microphones in general, as far as sensitivity is concerned, may be divided into two classes: (a) High level and (b) Low level. Ordinarily quality microphones will be found to fall in the low level classification. The crystal microphone supplied with this unit is this high quality low level type. The single button carbon type with transformer and battery and the contact microphones are high level microphones. Other high level sources will be discussed under the head, input other than microphone.

A gain switch has been provided to allow the use of high or normal input to the amplifier. When recording with a low level input the gain switch should be set on the High Gain position and when using a high level input, it should be set on the normal gain position.

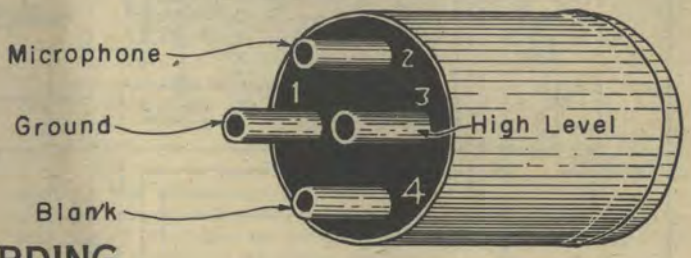
INPUT OTHER THAN MICROPHONES

In many cases it may be desirable to introduce external input to the amplifier other than that from the microphone. For either recording or Public Address work it may be desirable to feed in the output of (a) an external radio (b) FM Tuner (c) external phono pickup or other electronic devices. Such sources are considered high level inputs and the gain switch should be set accordingly.

Any high level input may be introduced into either of the mike jacks through a plug like the extra plug supplied with the unit and should be connected as shown below.



Some trouble may be experienced in the making of instrumental recordings. There may be heard what appears to be distortion but due to the fact that the ordinary room does not have the accoustical properties of a recording studio there will be room reverberation. The ear does not notice this at the time but the microphone will. Frequently this trouble is corrected by the use of contact microphones. Placed directly on the sounding boards of the instrument, (Piano, Violin etc.), it gives a true reproduction of the tones and overtones produced by the instrument.



RE-RECORDING

Many novel effects may be obtained by Re-Recording, that is after a record is cut it may be placed on an external record player, the output of whose pickup head is fed into the right hand mike jack of the recorder. This should be fed in by a specially wired plug as shown above. As the record is being played on the record player and re-recorded on the Recorder, input from the Recorder microphone may be superimposed on it by turning up the left hand volume control. As an example of the novel effects obtainable, a person might record a song, re-record it, mixing in his own voice while re-recording, thus sing a duet with himself.

SERVICE DATA FOR PROFESSIONAL SERVICEMEN

CUTTING ARM ADJUSTMENTS

CUTTING ARM HEIGHT

1. Place on the turntable an uncut record of the type that is to be used for recording.

2. Place stylus in the cutting head. Insert it as far as it will go, rotate it until the long flat on the shank of the stylus faces the stylus screw, then firmly tighten the screw.

3. Raise the cutter arm well up from its rest, swing it over the record and carefully lower it so that the stylus rests on the record near the center (which should not be revolving). Observe the position of the stylus screw in the slot in the cutter arm. If the screw is approximately in the middle of the slot no adjustment of the cutter arm height is required, but if the stylus screw is close to either the top or the bottom of the slot the arm should be adjusted in the following manner:

(a) Lift the cutter arm into a vertical position. Underneath the arm will be found a machine screw on which the arm rests. The adjustment of this screw is preserved by a lock nut. Loosen the lock nut and rotate this screw until the stylus screw occupies the center position in the slot when the cutter arm is in the recording position, then tighten the lock nut and again check the position of the stylus screw to see that the adjustment has not been disturbed by tightening the lock nut.

(b) Cut a few blank grooves (volume control at zero) while watching the stylus screw to see that as the record revolves, the stylus screw does not approach either end of the slot. If this condition holds true, the height of the cutter arm is properly adjusted until a new stylus is used having a length a great deal different than the stylus used in the original adjustment, or unless records of a new thickness are used that are sufficiently different from the original records to require readjustment of cutter arm height. NEVER ATTEMPT TO MAKE A RECORDING WITH MORE THAN ONE DISC ON THE TURNTABLE.

If the normal position of the screw is too high, the entire weight of the cutting arm is placed on the stylus when the stylus screw hits the top of the slot. This heavy weight will cause the stylus to dig into the record base and ruin at least the record and in all probability the stylus as well.

CUTTING PRESSURE

Variation in the hardness of different record coatings may require different cutting pressures for different makes of records.

The normal depth of cut produces a width of groove approximately equal to the width of the uncut portion left standing between grooves. Examine the blank grooves cut during the preliminary adjustment to see whether they approach this condition. If not, the adjusting screw exposed through the top of the cutting arm can be changed quite easily to accomplish the desired result. If the cut is too light, the playback needle may not "track" and may jump out of the groove and scratch across the record. If the cut is too heavy the stylus may cut over into the adjacent groove on loud notes, or in cutting one groove, the stylus may push some of the wall material into the previously cut groove producing what is called an "echo", although when played back the "echo" precedes rather than follows the normally recorded sound.

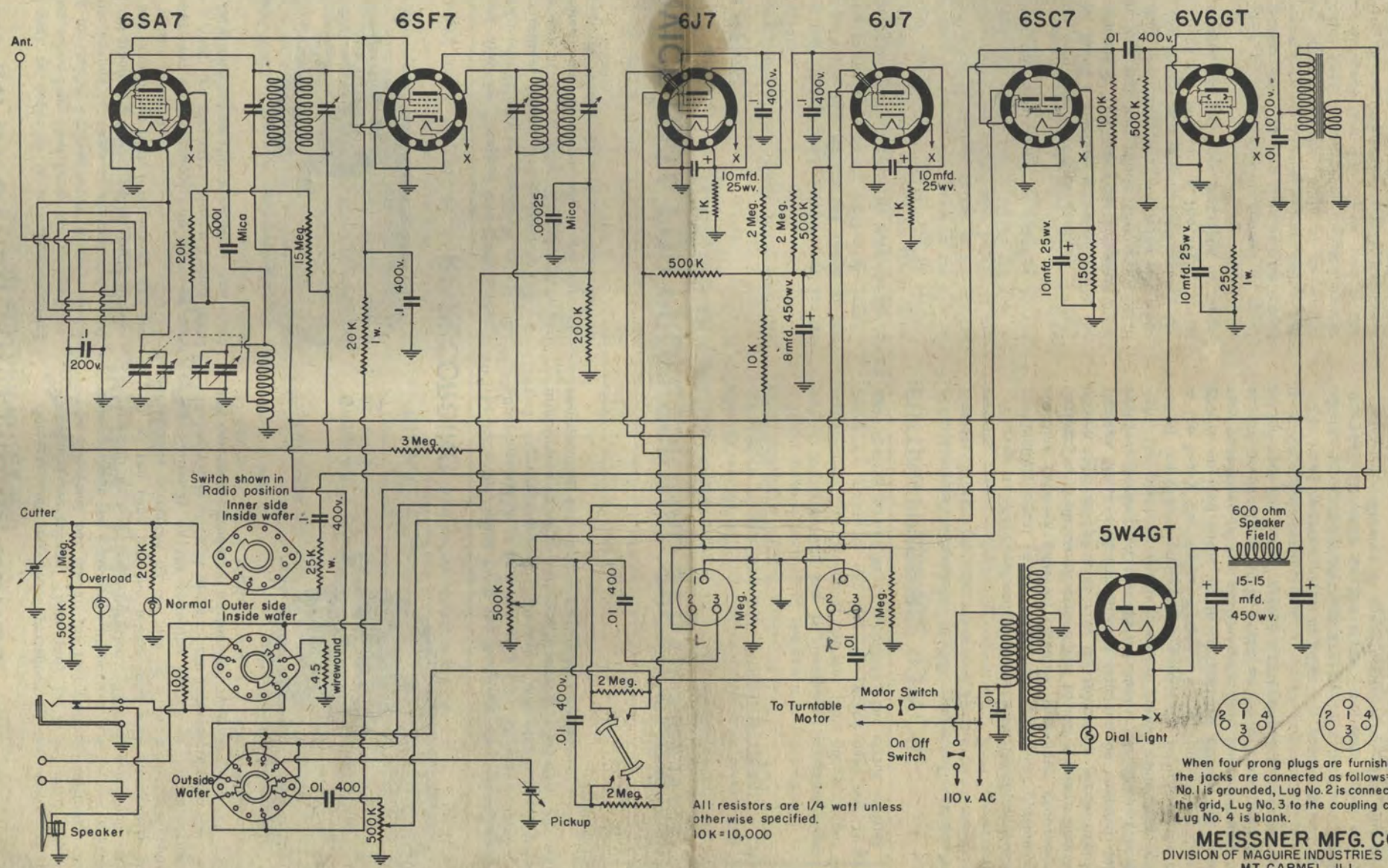
The most common error in adjusting cutting pressure is making the cutting pressure greater than necessary, which increases the wear on the stylus, increases echo, and increases the difference in speed between recording and playback.

RADIO-PHONO-RECORDER

9-1065

DUAL SPEED TURNTABLE

I-F=456KC



MEISSNER MFG. CO.
DIVISION OF MAGUIRE INDUSTRIES INC.
MT. CARMEL, ILL.

ADDITIONAL DATA FOR PROFESSIONAL SERVICEMAN

POWER SUPPLY .....110-125 volts 50-60 cycles A.C.

OPERATING VOLTAGES

Below is given the voltage measured from the tube pins shown—to chassis, using a 1000 ohm per volt meter, line volts 117. It should be remembered that variations of as much as several percent from the voltages shown in the chart, do not necessarily indicate trouble, since variation in line voltage, variation of resistors within the allowable tolerance, etc. all effect the operating voltages.

POWER CONSUMPTION .....110 Watts including motor

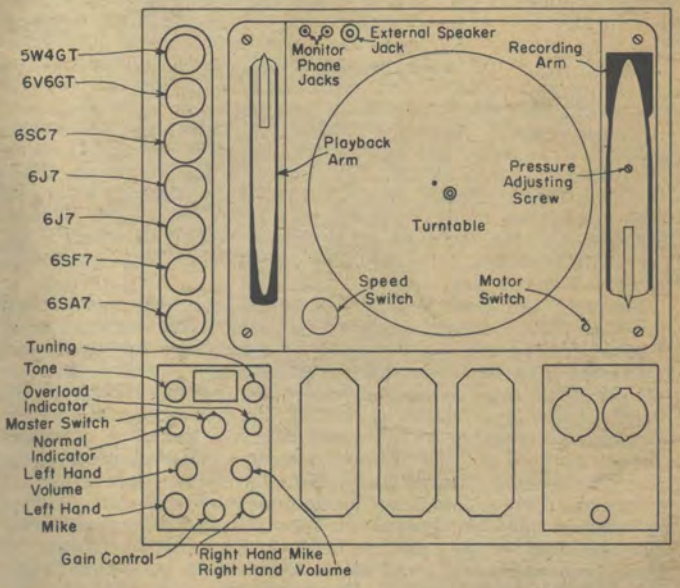
INTERMEDIATE FREQUENCY .....456 KC

ALIGN .....1400 KC

PAD .....No adjustment necessary

NEON VOLUME INDICATORS .....GE T-2

DIAL LIGHT .....Any 6-8 Volt type—Bayonet Base



VOLTAGE CHART								
Tubes	#1 Pin	#2 Pin	#3 Pin	#4 Pin	#5 Pin	#6 Pin	#7 Pin	#8 Pin
6SA7	——	——	260	80	——	——	6.3AC	——
6SF7	——	——	——	80	——	260	6.3AC	——
6J7	——	——	60 *	—— ‡	.4	250	6.3AC	.4
6J7	——	——	60 *	—— ‡	.4	250	6.3AC	.4
6SC7	——	125	——	——	125	1.7	6.3AC	——
6V6GT	——	——	230	260	——	——	6.3AC	12.5
5W4GT	——	310	——	320AC	——	320AC	——	310

Note: Line voltage = 117 volts * Measured on 1000 volt range. ‡ Very low reading on 1000 volt range. Switch to be in RADIO position for all readings

REPLACEMENT PARTS LIST

02076 .....Antenna coil (Loop)
01710 .....Oscillator coil
02072 .....Input I-F transformer
02074 .....Output I-F transformer
19851 .....Output transformer
19847 .....Power transformer
19843 .....D. P. S. T. wafer switch
19842 .....5 Position switch
19696 .....Motor switch
19828 .....Tone control with switch
19827 .....Volume control
18162 .....2-gang Variable cond.
16124 ..15-15 mfd. 450 wv. Electrolytic
24126 ..10-10 mfd. 25 wv. Electrolytic
16113 ..... 8 mfd. 450 wv. Electrolytic

15143 .1 mfd. 400 v. paper condenser
15142 .1 mfd. 200 v. paper condenser
14181 .05 mfd. 400 v. paper condenser
16136 .01 mfd. 1000 v. paper condenser
14110 .01 mfd. 400 v. paper condenser
18107 .....01 mfd. line condenser
14102 .....00025 mfd. mica condenser
16198 ..... 4.5 ohm candohm resistor
15152 ..... 100 ohm ¼ w. resistor
14191 ..... 1,000 ohm ¼ w. resistor
14194 ..... 1,500 ohm ¼ w. resistor
14143 ..... 10,000 ohm ¼ w. resistor
14169 ..... 20,000 ohm ¼ w. resistor
14190 ..... 20,000 ohm 1 w. resistor

14144 ..... 100,000 ohm ¼ w. resistor
14170 ..... 200,000 ohm ½ w. resistor
14155 ..... 500,000 ohm ¼ w. resistor
18152 ..... 1 megohm ¼ w. resistor
24127 ..... 2 megohm ¼ w. resistor
17146 ..... 3 megohm ¼ w. resistor
18166 ..... 15 megohm ¼ w. resistor
19846 .....Dial Scale
19628 .....Neon Indicators
19695 .....Speaker
19821 .....Motor turntable
19470 .....Jack
19468 .....Pin Jack
19855 .....Microphone
19856 .....Microphone Plug

MEISSNER MANUFACTURING CO. MT. CARMEL, ILLINOIS
DIVISION OF MAGUIRE INDUSTRIES INC. Printed in U. S. A.
J-184 A